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Libraries Without Walls for Books Without Pages

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Electronic Libraries and the Information Economy

The world's great libraries share a great vision: Books once hoarded in subterranean stacks will be scanned into computers and made available to anyone, anywhere, almost instantly, over high-speed networks. A researcher in San Francisco might, without leaving the desk, reach into the database of the British Library to grab a copy of the Lindisfarne Gospels, while another researcher in London rummages through the collections of the Library of Congress trying to find various Federalist Papers. Instead of fortresses of knowledge, there will be an ocean of information.

Realizing this vision will transform libraries from guardians of tradition to catalysts of a vast change. By breaking down the walls that separate libraries from each other and from their users, librarians dissolve the barriers that separate libraries from publishers. This will change the economics of publishing, and with that, the way in which ideas are disseminated and culture is made.

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The key step in this process is how the digitized images of books and journals are distributed from the libraries themselves. In the logic of technology, this is a trivial and obvious thing to do. Today, librarians spend increasing amounts of time and money copying text from paper - either to send it to some remote researcher, or to save the text from the decay of the paper on which it was printed. Many of those texts were created in electronic form. Why not, the logic goes, cut out unnecessary page-turning and work directly with the electronic version of the document?

Some libraries already are. Perhaps the most ambitious plans are being laid at the Bibliotheque de France, the French national library. Budget permitting, it hopes to make electronic copies of 100,000 of the "canonical works of the 20th century" available electronically throughout France and, perhaps, throughout the world. But the Bibliotheque de France is not alone. At Boston Spa in Yorkshire, the British Library runs a service which finds hard-to-locate journal articles and other documents. Last year, it sent out more than 3 million bits of text worldwide, mostly photocopies, but also an increasing number of faxes. To cut down the sheer grunt work of copying text, the British Library is experimenting with new forms of service. Instead of receiving a printed journal from publishers, for example, it now receives a CD-ROM containing digitized images of the articles from which it prints out a new hard copy each time one is requested.

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Such initiatives raise big questions. If someday in the future anybody can get an electronic copy of any book from a library free of charge, why should anyone ever set foot in a bookstore again? But if the books on a library's electronic shelves are not free, what is left of the distinction between library, printer and bookstore - and what is left of the library's traditional *raison d'être*: namely, making information available to those who cannot afford to buy it?

In the Beginning There Were Words

Libraries came into being because books are good for the soul, but difficult to produce. In the beginning, libraries and publishing houses were run in the same place by the same people - that is, by monks in a scriptorium. Daniel Boorstin, a historian and former librarian of Congress, reckons that if there is a patron saint of libraries, it is Saint Benedict of Nursia, who in the sixth century founded the Benedictine order of monasteries and set quills to illuminating paper across Europe.

The monks guarded their work jealously. In England's Hereford Cathedral, books were chained to the shelves. Although books were sometimes lent to other monasteries, the consequences for failing to return them were severe. In his book *The Discoverers*, Boorstin cites an inscription in a 12th century manuscript now in Oxford's Bodleian Library: "This book belongs to the monastery of St. Mary of Robert's Bridge, whosoever shall steal it, sell it or in any way alienate it from this house, or mutilate it, let him be forever cursed. Amen." (Inevitably, this inscription is followed by a note from a 14th century bishop of Exeter who states that, whatever anybody else may have done, he got the book legitimately - so rest his soul.)

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While the monks practiced two of the key concepts of the modern library - collecting books and guarding them for communal use - they lacked a third: a system for organizing books so that they could be found later. Most libraries simply had too few books to bother with a catalog. With the spread of the printing press, however, the distinction between library and publisher split - and the proliferation of books and libraries required better technology for telling books apart: namely, card catalogs and indexing systems. Card catalogs, in turn, helped reinforce a new distinction that sprang up with the advent of printing: that of authorship.

An author is someone whose views are considered so important and interesting to a publisher that the publisher is willing to risk money to bring those views to the public. Authors and (especially) would-be authors have complained about the arbitrariness of this distinction since before the printers of London balked at publishing Newton's treatise on calculus. (Their grounds: mathematics books never sell.) Changes in the technology of libraries and publishing may create alternatives to the power of publisher - and soon.

Much of the necessary preliminary work of automating card catalogs is already done without anyone but librarians really noticing. The automated card catalog, in turn, helps to raise the possibility of a new electronic world in which all authors can be, in effect, their own publishers. The publishers' power stems from the cost and difficulty of printing. In an electronic world, "printing" is trivial; anyone can copy an electronic text with a few keystrokes. The really hard problem in the electronic world is finding which text you might want to read or to copy. Electronic card catalogs are an important first step towards solving that problem.

Books by the Numbers

From your local neighborhood Internet network terminal, you can now search the catalogs of thousands of libraries across the world. The Library of Congress catalog is there: containing more than 20 million entries. John Mahoney, head of computing at the British Library, says that 12-15 million items in the British Library's electronic catalog will become available over the British research network, JANET, by this summer. By far the greatest contributions to online access to information, however, come from Ohio, of all places.

In 1967, academic librarian Frederick Kilgour had two insights: first, that all libraries soon would put their card catalogs on computer, and second, that it was senseless for them all to duplicate the work of typing text from cards into the machines. So he put together a consortium of academic libraries from Ohio, got a bit of seed money from the state legislature and began creating a cooperative card catalog based on a shared database.

Today the OCLC, descendant of Kilgour's Ohio College Libraries Center, enables more than 14,000 libraries, spread over 46 countries, to share a database of about 26 million entries. Some 5,000 of these libraries are general members that agree to share all of their catalog entries with other OCLC members - so that once one member has made a catalog entry for a new work, others can simply copy that entry rather than duplicate the same effort. Not surprisingly, OCLC also runs an inter-library loan service to help librarians get their hands on books that appear in the shared database, but not on their own shelves.

Automated catalogs are a boon to researcher and librarian alike. The OCLC has built a new service called EPIC that searches its online catalog and enables a researcher to track down information by any, some, or all sorts of indices - including author, title, publisher and subject.

But the sheer ease with which researchers can now find their way through vast collections often merely adds to their frustration. Though it takes only a few seconds to locate a book or article in an automated catalog, it then requires hours to bring it up from the stacks - or weeks to get it on inter-library loan. Nor is the impatience of researchers the only factor pressuring libraries to extend the scope of automation from the card catalog to the body of texts themselves.

On the contrary, more powerful forces are at work. One is the rapid decay of most paper made since the mid-19th century, a time when papermakers switched to acidic wood pulp as their raw material. Joseph Price, head of technology at the Library of Congress, estimates that each year 80,000 of the items on its shelves become so brittle that their pages can no longer be turned. The only way to save the text is to copy it onto another media. Today, the medium is typically microfiche, but Price reckons it will soon be some form of optical disk.

But paper decay is only one force pushing libraries to move text onto other media. Another is the rising cost of paper publications and the difficulty in sharing them. Although many libraries can all plug into an electronic database, far fewer can have a given book or magazine on their shelves at any given time. Problem is, libraries can no longer afford to have all the books and journals they feel they should have on their shelves. Over the past few decades, the number and cost of academic journals has skyrocketed.

If publishers and researchers are not to be caught in a vicious spiral, whereby rising prices cause declining circulations and declining circulations push prices further up, the pressure grows on libraries and publishers alike to find new ways that enable researchers to get and to pay for only those journal articles that are needed. Here's where new technology can help.

Enter the Electric Book

Pushed from many directions, all of the world's libraries are moving towards electronic distribution of text. But each is moving into the electronic world in its own way. To see the differences, compare three of the world's great libraries: the Library of Congress, the Bibliotheque de France and the British Library.

The French, inevitably, approach automation with the most panache. They are engineering a whole new national library, called the Tres Grande Bibliotheque, which will start from a grand new building and build a grand new foundation for France's libraries. According to Helene Waysbord, one of the creators of this new vision, the library hopes to strike a balance between conservation and diffusion - between protecting heritage and communicating it. To that end, the project has several strands. One is a new national library building: a monument to the book now being constructed on the left bank of the Seine. Its four towers stand at the corners of a sunken garden - at which researchers can gaze through two-story windows while they work.

But in addition to building new walls, the French are also trying to create a library without walls. Under the auspices of the Tres Grande Bibliotheque (after the French high-speed trains, the Tres Grande Vitesse), the automation of card catalogs has been accelerated. To go with automated catalogs, the Bibliotheque de France will install 200 research workstations in the library's public areas when it opens in 1995.

The workstations will provide a network link to the card catalogs, note-taking and bibliography software, and, most ambitious, a sort of electronic notebook customized for work in electronic libraries. The workstations are still in the early prototype stage, but the plan is to allow a researcher to scan pages of text directly into a personal database instead of photocopying them for hard files. Scanned text can then be annotated, indexed, and searched by a variety of means.

Last and most ambitious of all, the Bibliotheque de France also has begun creating a new sort of electronic library based not on paper, but on the digitized images of books. It is busily scanning the pages of 100,000 great works of the 20th century as chosen by a committee of notable French citizens. Through designated computer networks, these books will be made available far beyond the walls of the library - although the sheer amount of memory required to store the image and contents of a book means that, for now, the ability to read these electronic books will be limited to only those possessing both extremely high-powered computers and extremely high-powered network connections.

The task of digitization is one in which France's dirigiste, centralized bureaucracy can make rapid progress. First, as Waysbord points out, France worries little about political correctness. French academics use the phrase "cultural patrimony" without ducking or sneering, and all schools still teach the same lessons on the same day. Nobody is going to complain too loudly that the Bibliotheque's list of great books over-represents dead white males.

Equally important, there is a French tradition to push ahead with a big idea and then sort out the commercial problems later. The bureaucracy can brush aside publishers' concerns over the implications of electronic distribution of texts with a speed and power that their English-speaking counterparts could never match. For better or worse, that is how the country got the Concorde, the Airbus, its nuclear power program, Minitel - and now the electronic book.

The Woe of Walls

By contrast, British and American librarians want to sort out the economics of the electronic library from the very beginning.

The commercial consequences of electronic libraries could be huge – and publishers' trade associations are already closely watching libraries with a suspicious eye. More simply, the libraries do not want to be stuck with loss-making electronic services that taxpayers are reluctant to support.

The British Library reached the end of its taxpayers' patience with the growth of overseas demand for faxes and photocopies of journal articles from the library's Document Supply Centre at Boston Spa in Yorkshire. So it evolved a three-tier pricing system.

Basic library services are free – including access to reading rooms, card catalogs, and most book, sound, map and picture collections. Charges for supplying documents from Boston Spa are limited to the costs

of photocopying and transport when the service is provided to those within the United Kingdom. But providing documents to foreigners is run at a profit. Indeed, Boston Spa and a handful of other for-profit services now bring in about \$50 million of the British Library's \$150 million-a-year budget.

In theory, the experience with Boston Spa should put the British Library in an excellent position to blossom in the electronic world. Experiments with distribution of electronic documents from CD-ROM have been promising. So too has a link with the Colorado Association of Research Libraries, which faxes to American libraries copies of the actual journal articles whose citations have been found by searching online catalogs.

Although Mahoney and his colleagues at the library are eager to push ahead into the electronic world, a number of problems arise. One of the more vexing questions concerns copyright. Copyright payments for photocopied works in Britain are handled through a deal with the Copyright Licensing Agency (CLA), which, like its American counterpart, the Copyright Clearance Center, negotiates on behalf of publishers to set and collect copyright charges from high-volume photocopiers like libraries, universities and corporations. But publishers have not given the CLA authority to negotiate deals for electronic publication, not even for facsimile transmission.

The very idea of site licenses for photocopying is still a new one and faces much resistance among would-be licensees. Although the CLA is ready and willing to try to extend licensing to the electronic world, publishers want to move slowly – in part because they want to consolidate copyright deals with photocopiers, and in part because they have arrived at a consensus among themselves over just how to face the electronic future. Until the publishers decide how they want to face the future, the future remains on hold.

Meanwhile, the British Library is caught in a managerial screw-up on a scale only the British could inflict on themselves. Its new building, across the road from St. Pancras railroad station in London, is now running several years behind schedule, and at a cost of \$700 million, more than three times over budget. So much is wrong with the project that no one is sure when it will open. While the British Library was not responsible for mismanaging the construction – that dishonor falls to another branch of government bureaucracy – it still has to pay the rising bills. Paying for the building has cut book acquisition by more than 40 percent – and it is wreaking similar havoc with automation budgets and plans.

Mega-markets, Meta-markets

On the other side of the Atlantic, the Library of Congress is just beginning its own budgetary debate. It is now forbidden by law for the Library of Congress to charge more than the cost of reproducing documents, plus 10 percent. As an add-on to experiments designed to test the longevity of optical discs as an archival medium, Price put photographs, sound and text onto an optical disc. The result made him enthusiastic about the prospects for electronic publications combining several media – marrying, say, Civil War photographs with letters and other documents from the Library of Congress's vast collections. But building such publications requires heavy research, the costs of which the Library alone cannot recover. So the Library has asked for legislation overturning the 10-percent restriction, but the proposal has run into controversy.

The Information Industries Association, representing publishers, fears that the legislation will unfairly set up government-subsidized competition. The American Library Association, meanwhile, fears that the legislation will set libraries on a slippery slope that will lead to the elimination of free services. The Library of Congress is talking compromise on both fronts. It says it will offer publishers a right of first refusal on all of its electronic projects – though it is not clear how this would work. Similarly it promises to give librarians a guarantee that certain basic services will remain forever free.

Libraries will be a powerful force in the emerging world of electronic information, so the debate merits time and attention. How, for example, might the cost and convenience of combining electronic clippings from libraries compare with customized electronic journals from publishers? What happens to the publishing industry when publishers can reduce their risks by not printing any copies of all but the most popular journals on paper – but instead can wait for interested readers to print their own copies of the articles they want from (taxpayer subsidized) library databases?

None of these changes will happen overnight. Until there is a universally agreed and available formatting language – which is still a long way off – librarians plan to work with bit-mapped images of books. The electronic image of a book is still a few gigabytes worth of information, and a gigabyte is a helluva lot of data – several times more than what fits into most of today's computers or flows conveniently through computer networks. But as the changes add up over time, those most transformed may well be libraries themselves.

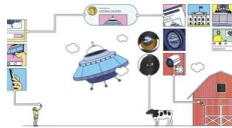
The logic of technology makes librarians and editors increasingly interchangeable. By lowering the costs of reproduction, and thus increasing the amount of information published, new technology increases the value of the judgments made by librarians and online searchers as they pick and choose what their customers might want to read. Eventually, publication may come to mean no more than somebody grabbing a document from the author's networked computer. Even before that, the editorial judgment of the librarian attains value and importance equal to that of the editor – and a paradox arises.



If libraries do not charge for electronic books, not only can they not reap rewards commensurate with their own increasing importance, but libraries can also put publishers out of business with free competition. If libraries do charge, that will disenfranchise people from information – a horrible thing. There is no obvious compromise. It is not really satisfactory either to cripple the technology so that libraries' digitized texts can be read on-screen, say, but not stored; or to divvy information into two categories: the free (paid for by the taxpayer) and the commercial (paid for by the consumer). But compromise is badly needed – the technology is on the verge of transforming the great libraries' vision of paradise into a global reality.

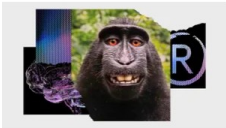
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